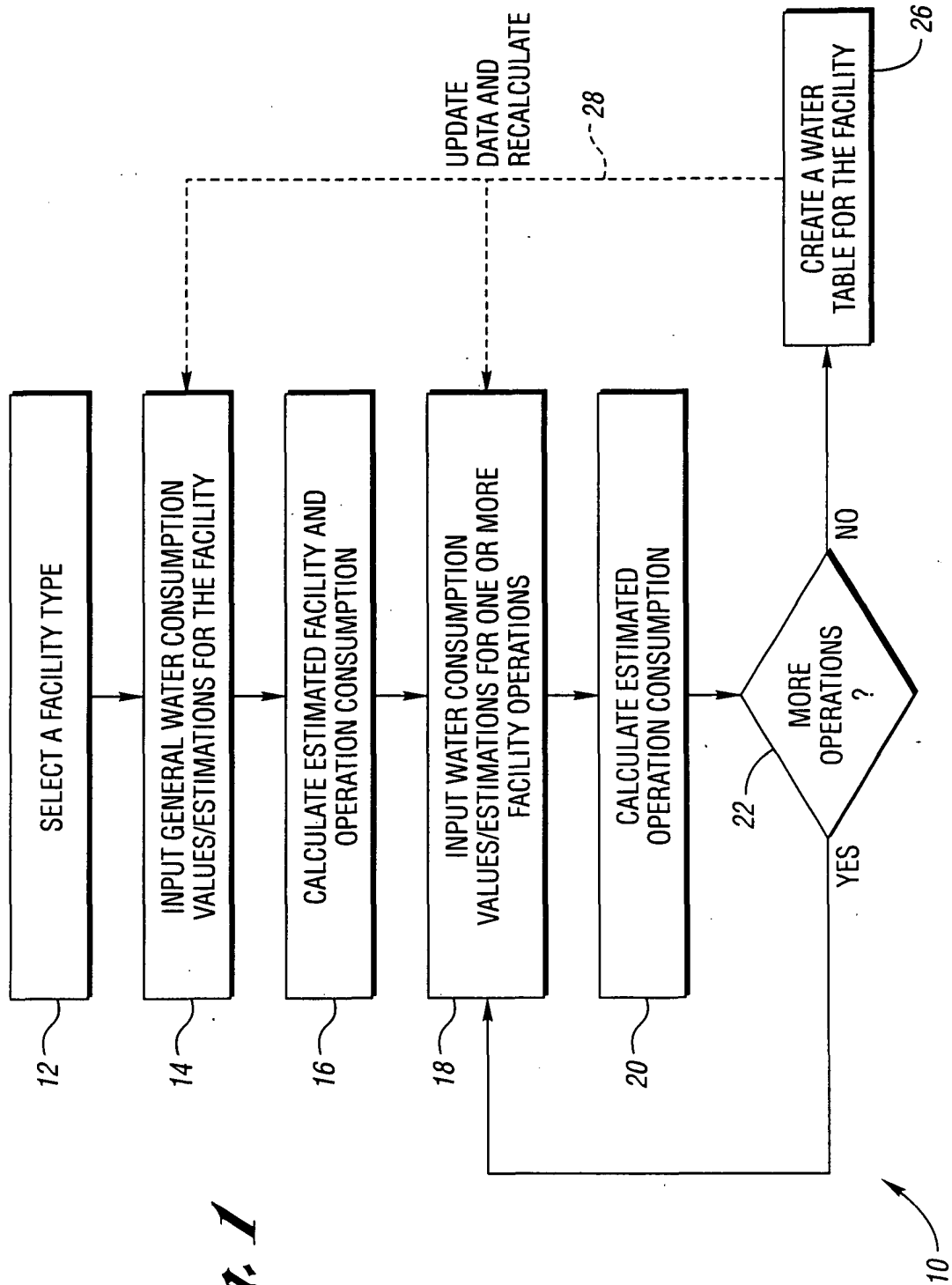


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Welcome to WET -- The Water Estimation Tool

This tool helps facilities to optimize water use by:

- 1) Estimating water consumption for equipment and systems whose usage is unknown, and
- 2) Providing typical use rates for comparison to identify the greatest opportunities for water use reduction, and
- 3) Aiding facilities in creating a water balance for total water use.

When creating a water balance it is preferable to first utilize metered data and data where process knowledge provides a high level of confidence (e.g. cooling towers). A water balance can be developed by building upon known water consumption with estimates from this program for systems where no data is available (e.g. lawn watering or kitchen operations).

The "Summary Sheet" may be created when all desired calculations are complete to build a facility water balance diagram and collect the value estimated on each worksheet. User may substitute known values for estimated ones and enter additional water use volumes for items not included in this program.

Please note, unusual episodic releases such as draining a fire reservoir or a cooling tower blowdown valve stuck open may significantly alter real water use volumes, and may not be reflected by these water use estimations.

To begin the program, select one of the following types below and press the arrow key.

Assembly

Assemble

Engine/Transmission

Stamping

Casting

Office Building

Please press arrow to continue

Fig. 2

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Please respond to the following questions. If exact figures are unavailable you may use educated guess to get started. Use only the pull-down lists to specify units. When all fields have been answered, press "COMPLETE"

What is the facility floor area?

What is the plant production per year?

How many production/work days per year?

What is the total number of employees in the plant?

How many cafeteria meals are served per day?

What is the area of lawn watered?

How many cooling towers does your facility have?

Please choose the volumetric units you prefer to use. All your inputs (unless a pull-down menu is offered) and all answers are assumed to be in these units.

Unit Choice

square feet

3,200,000

230,000

240

2,500

1,700

3

acres

3

COMPLETE

cubic feet

Domestic Water Use

Lawn Watering Use

Fire Protection System Water Use

Assembly Operations

Cooling Tower Water Use

Boiler System Water Use

FINAL SUMMARY SHEET

Fig. 3

Domestic

	Daily Use	Annual Use
Employee Use	37,500	9,000,000
Cafeteria Use	2,720	652,800
Janitorial Use	15,543	3,730,286

Total Annual: 13,383,086

Fig. 4

Lawn Watering

Please answer all of the following questions

How many months are grounds irrigated per year?	6
How many times per week are the grounds?	3
How long is each watering event (in minutes)?	20

Calculate

The total water use from lawn watering: 858,097

Fig. 5

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Fire Water System

	Input	Daily Use	Total Annual Use (x3)
Measure the average time your jockey pumps run per day in minutes. A typical value is about 12 minutes per day.	15		
What is the pump rate? Please use the pull-down menu to select pump rate units? A typical for pump rate is 75 GPM/4.73 LPS/17.03 (m3/hr).	70	1,050	383,250
How many risers are in your plant? If unknown please leave blank.			420,000
How many flow switches do you have in your plant (one-inch drain test). If unknown please leave blank.			230,400
How many hydrants are on facility grounds?	18		46,800
CALCULATE			1,080,450

Fig. 6

Car Wash and Leak Testing

For systems with Once Through Water Use:	If True Mark 'Y'
Is the leak test a once-through operation?	
Is the Dynamic/funnel/hurricane test a once-through operation?	
Is the Car Wash a once-through operation?	
For Systems with Recalculating Water:	
How large is Your Leak Test Collection Sump (Vol.)?	5,000
How many dumps per month?	4
How Large is your Dynamic/funnel/hurricane test collection sump (Vol.)?	8,000
How many dumps per month?	4
How Large is your car wash collection sump (Vol.)?	3,500
How many dumps per month?	4
Total Amount: 792,000	
Calculate Water Booth Water Use	

Fig. 7

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E-Coat System

How many make-up streams feed the E-coat System? **DDN E**

Calculate E-Coat

GPM

Make-up Stream Flow (volume)

Make-up Stream Flow (volume)

Make-up Stream Flow (volume)

Make-up Stream Flow (volume)

Make-up Stream Flow (volume)

Total Daily Volume: 2,346
Total Annual Volume: 703,828

Phosphate

Hours of Operation per Stage #	Process Name	Tank Volume	Frequency (dumps/month)	Make-up enter (Volume)	Dumped per Stage	Annual volume make-up
1	Deluge Flood Spray	1,000	2		24,000	
2	Cleaner Spray	800	2		19,200	
3	Cleaner Dip	1,200	1		14,400	
4	Water Rinse Spray	3,000	3		108,000	0
5	Water Rinse Spray	2,500	4		120,000	
6	Activation Dip	20,000	2		480,000	
7	Phosphate Dip	900	3		32,400	
8	Water Rinse Spray	1,000	2		24,000	0
9	Water Rinse Spray	2,000	2		48,000	
10	Passivation Spray	1,250	2		30,000	
11	Recirc. D.I. Spray	900	3		32,400	
12	D.I. Water Dip	800	3		28,800	
13	Virgin D.I. Spray	650	3		23,400	0
Calculate					Total Annual:	961,200

Total Daily Volume: 2,346
Total Annual Volume: 703,828

Fig. 8

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Cooling Towers

Total Amount Use 2,425,136

Calculate

	Process A	(Gallons/Day)	(Gallons/Year)
1 What is the cooling tower name or location? (Optional)	500	2,938	1,071,636
What is cooling tower recirculation rate?			
What is the difference in temperature (°C) between the influent and effluent?	4		
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?	6		
How many months per year does the tower operate?	12		

	Process B	(Gallons/Day)	(Gallons/Year)
2 What is the cooling tower name or location? (Optional)	275	2,104	767,448
What is cooling tower recirculation rate?			
What is the difference in temperature (°C) between the influent and effluent?	5		
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?	5		
How many months per year does the tower operate?	12		

	Seasonal	(Gallons/Day)	(Gallons/Year)
3 What is the cooling tower name or location? (Optional)	0	3,213	586,051
What is cooling tower recirculation rate?			
What is the difference in temperature (°C) between the influent and effluent?	0		
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?	0		
How many months per year does the tower operate?	0		

84

Fig. 9

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Boiler System/Powerhouse

What is the total output rating for ALL active boilers?	500	hp. hr. ▼
If condensate return is used for the boiler fee, what is the percent return?	85%	
Is the incoming water treated with membrane filtration (RO or similar technology)?	N	
If the incoming water treated with a demineralizer?	Y	

90

Complete

Annual Volume of Boiler Water: 1,728,000

92

Fig. 10

Fig. 11

Please enter the cost of water in the cell provided. Enter NUMBERS only, not symbols

Cost of Water:	4.50	Cost / 1000 (▼)
Percent of Total Water from purchased source:	100.00%	
Total Cost:	91,200	

Total Annual Volume (Galleons):	20,266,769
Collect Results	

Annual volume of domestic water use:	13,383,086
Annual volume of lawn care water use:	858,097
Annual volume of fire protection system water use:	1,080,450
Annual volume of cooling tower water use:	2,425,136
Annual volume of boiler system water use:	1,728,000
Annual volume of phosphate / E-coat water use:	0
Annual volume of leak tests and car wash water use:	792,000
Annual volume of additional water use:	

Annual volume of paint booth water use:	
Annual volume of air supply house water use:	
Annual volume of scrubber/water-based pollution control use:	
Annual volume of miscellaneous water use:	

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98b

98a

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